REMARKS

Review and reconsideration on the merits are requested.

Formalities

Applicants appreciate the Examiner accepting the drawings, acknowledging receipt of Applicants' claim for priority and, by checking "All", Applicants assume that all five (5) priority documents have been received and returning completely initialed PTO/SB/08 filed July 5, 2006 (ALL REFERENCES CONSIDERED...).

New Claim Structure

Applicants amended the claims by inserting new claims into the original claim structure and renumbering. Under US practice, it seemed simpler just to cancel claims 2-22 and 27 and rewrite as explained in the chart below which compares "Original (Former) Claims" to "Corresponding New Claims" and then sets forth "Newly Added Claims" which are claims not before presented.

Original (Former) Claims	Corresponding "New" Claims
1	1
2	29
3	30
4	31
5	32
6	33
7	34
8	38
9	39
10	Canceled
11	Canceled
12	Canceled
13	Canceled
14	40
15	41
16	43
17	47
18	48
19	51
20	52
21	Canceled
22	Canceled
27	53

"Newly Added Claims"
28
35
36
37
42
44
45
46
49
50

Also attached to the rear of this Amendment is a paper headed in the upper right-hand corner "ATTACHMENT" which basically sets forth "EXPLANATORY AMENDMENTS TO CLAIMS:" where the format which was originally used by Applicants with amended claims, newly added claims, canceled claims, etc. is set forth.

If the Examiner Wishes the Claims Change

If the Examiner believes any other type of claim numbering would render the claims clearer, the Examiner is requested to contact the undersigned and the same will promptly be submitted.

The main reason for canceling and rewriting is that it would have been necessary to constantly flip from a claim such as new claim 2 which would have been at the end of the present claims and then to the claim corresponding to claim 3, claim 4, etc., which would make an Amendment cumbersome to follow.

However, Applicants will take any action that the Examiner wishes.

JP 2001-46886 & US 6,696,131 B1 Information Disclosure Statement

During the examination of Japanese Patent Application No. 2003-293769 (based on one priority Japanese Patent Application No. 2002-326856 of the present application), which was patented as Japanese Patent 3529051 on March 5, 2004, Japanese Patent Laid-Open No. 2001-46886 (JP '886) was cited as a prior art reference.

U.S. Patent 6,696,131 B1 is the equivalent thereto; US '131. JP '866 was listed in PTO/SB/08 file July 5, 2006 and US '131 was listed in the PTO/SB/08 filed September 7, 2007. both considered by the Examiner.

Applicants want to have claims of the same scope in foreign countries, and amend the claims herein so as to agree with claims in other countries.

As now claimed, distinguishing features of the present invention reside in application of coating materials having a high viscosity to axial grooves exposed on the outer side surface of a honeycomb body to form a peripheral wall layer. This makes it possible to produce ceramic honeycomb structures having voids not only both in a peripheral wall layer and between the peripheral wall layer and the grooves but also principally between the peripheral wall layer and the grooves.

Specifically, as shown in Examples 8-11 of the present specification, when a coating material having a viscosity of 28,000 to 67,000 cP is applied to axial grooves exposed on the outer side surface of a honeycomb body to form a peripheral wall layer, voids are formed between the peripheral wall layer and the grooves. When the coated honeycomb body is dried at 40°C for 24 hours, and then dried at 70°C for 12 hours, one obtains a ceramic honeycomb structure where the grooves and the peripheral wall layer are integrated and no voids are generated in the peripheral wall layer due to the initial low initial drying temperature, thereafter followed by heating to remove a binder necessary for coating, whereby one produces a ceramic honeycomb structure where voids are formed between the peripheral wall layer and the grooves as shown in each ceramic honeycomb structure of Examples 8 to 11. One thus has voids between the peripheral wall layer and the grooves with numeric values of 7% (28,000 cP) to 97% (67, 000 cP) expressed by counting the number of grooves 14 having voids 22 between the peripheral wall layer 12 and themselves among all the grooves 14 (see page 33, line 11 to page 34, line 6; and Examples 8-11 in Table 4 at page 34 with Fig. 8 of the specification).

As shown in as shown in Examples 12-15 of the present specification, when a coating material having a viscosity of 45,000 cP or more is applied to axial grooves exposed on the outer side surface of a honeycomb body to form a peripheral wall layer, there are produced ceramic honeycomb structures each having voids 21 in a peripheral wall layer 12 and voids 22 between

the peripheral wall layer and the grooves with a numeric value of 42% or more of the number of grooves between the peripheral wall layer 12 and grooves 14 (see page 35, line 19 to page 37, line 18; and Table 5 at pages 36/37 of the specification).

Accordingly, Applicants change the characterizing clause of claim 1 from "wherein there are stress release portions at least partially in said peripheral wall layer and/or between said peripheral wall layer and said grooves" to --wherein there are stress release portions at least partially between said peripheral wall layer and said grooves--.

Remarks on Further Claim Amendments

With the amendment to claim 1 above, Applicants add new claim 28 dependent from amended claim 1 reciting that: "The ceramic honeycomb structure according to claim 1, which further has stress release portions at least partially in said peripheral wall layer."

Further, to explain more specifically the subject matter of claim 7 (how claim 34) reciting that: "wherein the number of grooves having said voids between said peripheral wall layer and said grooves is 5% or more of the number of the total grooves," Applicants add new dependent claim 35 calling for: "The ceramic honeycomb structure according to amended claim 34, wherein the total length of a contact portion of the grooves with the peripheral wall layer is 95% or less based on the total length of the grooves," which finds support at page 13, line 26 to page 14, line 2; and Fig. 9 of the specification.)

With the addition of the new claim 28, Applicants add new dependent claims 36 and 37 dependent directly or indirectly from new claim 28, which recite the same subject matter as amended claims 33 and 34, respectively.

With respect to claim (old) 8 (which now is claim 38) of the present application, with the recitation of the characterizing clause; "wherein the thermal expansion coefficient of said peripheral wall layer is smaller than those of said cell walls in a radial direction," to explain the

subject matter thereof more specifically, Applicants insert the recitation at the end thereof that: "wherein said peripheral wall layer has a composition comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass of an amorphous oxide matrix and said amorphous silica has a thermal expansion coefficient of $10.0 \times 10\text{-}7/°C$ or less," which finds support at page 6, lines 11-13; page 8, lines 4-6 and page 16, lines 21-22 of the specification.

With the change of claim 8 to claim 38 mentioned above, claim 9 is changed to claim 39, and the dependency of claim 14 (now 40) is to be changed from "claim 9" to --claim 39--.

With the addition of new claims 35-36 and the change of "claims 8 and 9" to --claims 38 and 39--, claims 10 to 13 (old) are canceled.

With respect to claim 40 (old 14), Applicants add new claim 42 dependent from claim 40, is added which recites the same feature as new claim 35 mentioned above: "wherein the total length of a contact portion of the grooves with the peripheral wall layer is 95% or less based on the total length of the grooves."

With respect to old claim 16 (which is changed to claim 43) of the present application, claim 43 specifically defines the features of axial grooves exposed on the outer side surface of a honeycomb body by removing a peripheral wall and nearby cell walls before firing from a ceramic green body (see page 20 lines 2-3 of the specification), and, accordingly, Applicants insert the phrase "and nearby cell walls" after the phrase "removing a peripheral wall" to recite --said ceramic honeycomb body being obtained by removing a peripheral wall and nearby cell walls before firing--.

To explain the subject matter of claim 43 more specifically, Applicants add new claim 44 dependent from claim 43 reciting some of the same features as claim 38 (old 8) stating that: "wherein said peripheral wall layer has a composition comprising 100 parts by mass of

amorphous silica and 2 to 35 parts by mass of an amorphous oxide matrix and said amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less."

With respect to the claim 43, Applicants add new claim 45 dependent from claim 43 and new claim 46 dependent from the new claim 45, each reciting the same feature the amended claim 1 and new claim 28, respectively.

With the addition of new claims 44-46 above, claims 17 and 18 are to claims 47 and 48 dependent directly or indirectly from claim 1.

With respect to the honeycomb structures according to claims 1 and 34, because these honeycomb structures have sufficient mechanical strength to avoid cracking, chipping, etc. by vibration, etc., when used in exhaust gas-cleaning catalytic converters or in particulates-capturing filters (see page 1, lines 9-13 in view of page 60, lines 8-15 of the specification), Applicants add new claims 49 and 50 each directed to a particulates-capturing filter.

With the claim amendments above, claim 19 is changed to claim 51, changing not only the dependency thereof from "any one of claims 1 to 18" to --any one of claims 1 to 28-30, 33-35, 38-41, 43-45 or 47-53--, and also change the recitation of the characterizing clause from "wherein said cell walls have a porosity of 50 to 80% and an average pore size of 10 to 50 μm" to --wherein said cell walls of said ceramic honeycomb structure have a porosity of 50 to 80% and an average pore size of 10 to 50 μm--, whose finds support at page 8, lines 12-14 of the specification.

With the change of claim 19 to claim 51 as mentioned above, claim 20 is changed to claim 52, and to explain the subject matter of claim 52 more specifically, Applicants not only incorporate the respective features of old claims 21 and 22 thereinto but also insert the recitation "and said amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less" to the

end thereof to make amended claim 52 (old 20) with the recitation of the characterizing clause such that:

> --wherein said peripheral wall layer is made of a mixture comprising amorphous silica particles and an amorphous oxide matrix, and wherein said amorphous oxide matrix is formed from colloidal silica and/or colloidal alumina, and
>
> wherein said peripheral wall layer has a composition comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass of an amorphous oxide matrix and said amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less--,

which finds support at page 8, lines 3-6, and page 16, lines 21-22 of the specification.

With respect to old claim 27 (new 53), to explain the subject matter of claim 53 more specifically, Applicants change the recitation thereof from "A coating material for forming a peripheral wall layer of a ceramic honeycomb structure, comprising 100 parts by mass of amorphous silica particles and 2 to 35 parts by mass (on a solid basis) of colloidal silica and/or colloidal alumina" to

> --A coating material for forming a peripheral wall layer of a ceramic honeycomb structure, comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass (on a solid basis) of colloidal silica and/or colloidal alumina, wherein said amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less, an average particle size of 1 to 100 μm and an aspect ratio of 10 or less--, whose features find support at page 19, lines 16-24; page 16, lines 21-22, and page 17, lines 20-21 of the specification.

Applicants now turn to Detailed Action.

Claim Objections

While claim 21 is canceled, corresponding language is used in claim 52 (old claim 20) and the subject noun added.

Withdrawal is requested.

The Prior Art

US 5,629,067 Kotani et al (Kotani); US 5,188,779 Horikawa et al (Horikawa).

The Art Rejections

Claims 1-6, 8-15, 17-18, 20-22 and 27 under 35 U.S.C. § 102(b) as anticipated by Kotani. Paragraph 3 of the Action.

Claims 7 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Kotani.

Paragraph 17 of the Action.

Claims 16, 17 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Kotani in view of Horikawa. Paragraph 20 of the Action.

These rejections are respectfully traversed.

The Examiner's position is set forth in the Action and while selectively quoted below is not set forth verbatim in Applicants' traversal which is now presented

Traversal

Art Rejections

Rejection of claims 1-6, 8-15, 17-18, 20-22, and 27 under 35 U.S.C. § 102 (b) as being anticipated by Kotani et al.

Claims 10-13 and 21-22 have been canceled mooting the rejection of these claims.

Kotani discloses a ceramic honeycomb structure which includes a ceramic honeycomb body having a matrix of partition walls forming a multiplicity of cells extending in an axial direction of the honeycomb body, where the radially outermost array of the cells are open to an outside of the honeycomb body in radial directions thereof, to provide a plurality of grooves formed in an outer periphery of the honeycomb body which extend in the axial direction (see Abstract of Kotani).

The Examiner will note that Applicants quote the Office Action (Action) at several points in the following discussion. The quotation is believed to be correct, but if there are any errors in the quotation, any inconvenience to the Examiner is regretted.

The Examiner states in Paragraph 9 of the Office Action that:

> "In regard to claims 1, 2, 4-6, 9, 10, 12-14 the partition walls (4) in an outer peripheral portion of the honeycomb body (2) are deformed, giving rise to a distorted cell portion (8) in which the cells (6) are distorted or deformed, while some cracks (10) are formed in the outer wall of the honeycomb body (2) (corresponds to applicant's stress release portions (voids) at least partially in said peripheral wall layer) (Column 5, Lines 6-10). Examiner takes the position a crack and a slit are analogous terms."

In contrast to Kotani, amended claim 1 calls for: "A ceramic honeycomb structure comprising a ceramic honeycomb body comprising axial grooves on its periphery and cell walls constituting a larger number of flow paths inside said grooves, and a peripheral wall layer covering said grooves, wherein there are stress release portions at least partially between said peripheral wall layer and said grooves."

Thus, one distinguishing feature of amended claim 1 is that the stress release portions are voids provided at least partially between the peripheral wall layer and the grooves, a feature which is different from and not suggested by Kotani.

The Examiner states in Paragraph 11 of the Office Action that:

> "In regard to claim 8, Kotani et al. disclose thermal stresses are minimized when the honeycomb body and outer coating have the same degree of thermal expansion. Otherwise the lower thermal expansion of the outer coating is preferred for effectively preventing cracks and other defects in the outer coating (outer wall) due to the thermal stresses. To reduce the thermal expansion of the outer coating, it is effective to reduce the thermal expansion of the aggregate, to be lower than that of a matrix provided by the inorganic binder having a relative high coefficient of thermal expansion is favorably used as the aggregate, to hereby reduce the thermal expansion of the outer coating, and make the resultant

> honeycomb structure highly resistant to thermal stresses (Column 7, Lines 23-36)."

Claim 38 (old claim 8 amended) calls for:

> "A ceramic honeycomb structure comprising a ceramic honeycomb body comprising axial grooves on its periphery and cell walls constituting a larger number of flow paths inside said grooves, and a peripheral wall layer covering said grooves, wherein the thermal expansion coefficient of said peripheral wall layer is smaller than those of said cell walls in a radial direction,
>
> wherein said peripheral wall layer has a composition comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass of an amorphous oxide matrix and said amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less.

Major distinguishing features of claim 38 are:

(1) the thermal expansion coefficient of the peripheral wall layer (not in a radial direction) is smaller than that of the cell walls **in a radial direction**, where

(2) the peripheral wall layer has a composition comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass of an amorphous oxide matrix and

(3) the amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less.

Although Kotani discloses/states at column 7, lines 23-36:

> "Otherwise the lower thermal expansion of the outer coating is preferred for effectively preventing cracks and other defects in the outer coating (outer wall) due to the thermal stresses. To reduce the thermal expansion of the outer coating, it is effective to reduce the thermal expansion of the aggregate, to be lower than that of a matrix provided by the inorganic binder having a relatively high coefficient of thermal expansion. Accordingly, cordierite having a small coefficient of thermal expansion is favorably used as the aggregate, to thereby reduce the thermal expansion of the outer coating, and make the resultant honeycomb structure highly resistant to thermal stresses,";

Kotani does not teach or suggest distinguishing features (1) to (3) of the claim 38 as above discussed.

Accordingly, Applicants submit that one of ordinary skill in the art, referring to Kotani, would not be led to distinguishing features of claim 38 (old claim 8 amended), and, accordingly, claim 38 is not anticipated by Kotani.

Thus, Applicants respectfully submit that claims 1, 38 (old 8), 52 (old 20) and 53 (old 27) are not anticipated by Kotani and request withdrawal.

Claim 52 (old 20) calls for:

> "A ceramic honeycomb structure comprising a ceramic honeycomb body comprising axial grooves on its periphery and cell walls constituting a larger number of flow paths inside said grooves, and a peripheral wall layer covering said grooves, wherein said peripheral wall layer is made of a mixture comprising amorphous silica particles and an amorphous oxide matrix,
>
> and wherein said amorphous oxide matrix is formed from colloidal silica and/or colloidal alumina, and wherein said peripheral wall layer has a composition comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass of an amorphous oxide matrix and said amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less.

Distinguishing features of claim 52 are that in the peripheral wall made of a mixture comprising amorphous silica particles and an amorphous oxide matrix,

(1) the amorphous oxide matrix is formed from colloidal silica and/or colloidal alumina,

(2) the peripheral wall layer has a composition comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass of an amorphous oxide matrix, and

(3) the amorphous silica has a thermal expansion coefficient of 10.0 × 10-7/°C or less.

The Examiner states in Paragraph 14 of the Office Action that:

> "In regard to claims 20, 21, Kotani et al. disclose the outer coating contains a matrix, which is generally an amorphous oxide matrix, which is preferably formed by using colloidal silica or colloidal alumina as the inorganic binder (Column 7, Lines 54-58). The cordierite particles may be wholly or partly replaced by organic ceramic fibers formed of amorphous mullite or amorphous silica alumina. The use of such ceramic fibers is advantageous in

avoiding cracks in the outer coating and effectively preventing peeling-off of the coating (Column 7, Lines 44-49)."

Although Kotani discloses at column 7, lines 55-58 thereof that:

"The matrix is generally an amorphous oxide matrix, which is preferably formed by using colloidal silica or colloidal alumina as the inorganic binder,"

Kotani is silent about distinguishing features (2) and (3) of claim 52.

Specifically, Kotani teaches that ceramic fibers comprise amorphous silica alumina (claim 5 thereof), which is different from the amorphous silica particles of the invention of the amended claim 52. Thus, the distinguishing features of claim 52 are different those disclosed in Kotani.

Claim 53 (old 27) now calls for:

"A coating material for forming a peripheral wall layer of a ceramic honeycomb structure, comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass (on a solid basis) of colloidal silica and/or colloidal alumina, wherein said amorphous silica has a thermal expansion coefficient of 10.0×10^{-7}/°C or less, an average particle size of 1 to 100 μm and an aspect ratio of 10 or less."

The Examiner states in Paragraph 15 of the Office Action that:

"In regard to claims 22 and 27, Kotani et al. disclose the matrix is generally an amorphous oxide matrix, which is preferably formed by using colloidal silica or colloidal alumina as the inorganic binder (Column 7, Lines 55-58) and 3-35 parts by weight of the solid portion of the colloidal oxides (such as colloidal silica or colloidal alumina) per 100 parts by weight of the cordierite particles and/or ceramic fibers (Column 7, line 66-Column 8, Line 3). The cordierite particles may be wholly or partially replaced by ceramic fibers formed of an amorphous mullite or amorphous silica alumina, for example (Column 7, Lines 44-46)."

However, major distinguishing features of claim 53(amended old claim 27) reside in the coating material comprising 100 parts by mass of amorphous silica and 2 to 35 parts by mass (on a solid basis) of colloidal silica and/or colloidal alumina, and the amorphous silica particles have a thermal expansion coefficient of 10.0×10^{-7}/°C or less, an average particle size of 1 to 100 μm and an aspect ratio of 10 or less. Kotani is silent regarding such limits.

Applicants thus respectfully submit that as a separate matter, claim 53 (amended old claim 27) is not anticipated by Kotani.

Rejection of claims 7 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Kotani

The Examiner states in Paragraph 18 of the Office Action that:

> "Kotani et al. do not disclose a quantitative value for the number of cracks/slits in a honeycomb structure."

The Examiner also states in Paragraph 19 of the Office Action that:

> "It would have been obvious to one skilled in the art at the time the invention was made that the optimum percentage of grooves having voids/slits/cracks (relative to the total account of grooves) is a result effective variable, which can be experimentally determined. The scope of the invention by Kotani et al. is not limited by the number of cracks."

Old claim 7 is now claim 34 and old claim 15 is now claim 41.

The Examiner's attention is directed to the fact that claim 34 (old claim 7) calls for the number of grooves having the voids between the peripheral wall layer and the grooves being 5% or more of the number of the total grooves.

Thus, the subject matter of claim 34 (amended old claim 7) is directed to the number of grooves having said voids between the peripheral wall layer and the number of grooves is 5% or more of the total number of the grooves in the ceramic honeycomb structure, where the stress release portions are voids provided between the peripheral wall layer and the grooves. Kotani is silent regarding such limits.

Thus, claim 41 (old claim 15) essentially contains the same limits as claim 34 (old claim 7), and the remarks advanced above regarding claim 34 (old claim 7) and Kotani being silent on the limits thereof apply with equal force here.

The features of claim 34 and claim 41 make it possible to provide ceramic honeycomb structures having voids between the peripheral wall layer and the grooves, which are excellent both in isostatic strength and thermal shock resistance temperature. This is because even though cracking occurs due to thermal shock stress in the peripheral wall layer 12, the cracking will not propagate into the cell walls 4 because the voids 22 release a thermal shock stress from the ceramic honeycomb structure (see page 35, lines 1-6 and Examples 8-11 in Table 4; and Fig. 8 with Fig. 5 of the specification). Kotani is silent on such aspects of the invention.

Thus, Applicants respectfully submit that one of ordinary skill in the art referring to Kotani at the time the present invention was made, Kotani not teaching that the stress release portions are voids provided between the peripheral wall layer and the grooves, would not reach the subject matter of claims 34 and 41 and, accordingly, these claims are not obvious over Kotani.

Rejection of Claims 16, 17 and 19 Under 35 U.S.C. § 103(a) as being Unpatentable over Kotani in view of Horikawa

The Examiner states in Paragraph 21 of the Office Action that:

> "In regard to claims 16 and 17, Kotani et al. does not disclose removing the peripheral wall before firing."

Claim 16 (old) is rewritten as claim 43, claim 17 (old) is rewritten as claim 47 and claim 19 (old) is rewritten as claim 51.

The Examiner also states in Paragraph 22 of the Office Action that:

> "Horikawa et al. disclose the peripheral portion of the ceramic honeycomb fired body is removed by working, preferably by grinding, to make the size of the fired body smaller than an

> intended size. Finally, the outer peripheral surface of the ceramic honeycomb fired body having the outer peripheral portion removed is coated with a coating material, which is dried to cure the coating material and produce the ceramic honeycomb structural body having the intended size (Column 3, Lines 41-49)."

The Examiner further states in Paragraph 23 of the Office Action that:

> "It would have been obvious to one skilled in the art at the time the invention was made that the coating (corresponds to applicant's peripheral wall layer) may be applied to the honeycomb using different methods – either (1) removing the peripheral wall, firing, and then adding the coating, or (2) applying the coating before firing, as evidenced by Kotani et al. and Horikawa et al. Both methods produce the same product.

Claim 43 (old) claim 16 (amended) calls for:

> "A ceramic honeycomb structure comprising a ceramic honeycomb body comprising axial grooves on its periphery and cell walls constituting a larger number of flow paths inside said grooves, and a peripheral wall layer covering said grooves, said ceramic honeycomb body being obtained by removing a peripheral wall and nearby cell walls before firing.

In the invention of claim 43, a major distinguishing feature lies in removing **a peripheral wall and nearby cell walls before firing**, because remaining stress provided by shaping and drying an extrusion-shaped green body causes some cracks even in the honeycomb structure upon removing the peripheral wall and the nearby cell walls from the fired body, and the fired ceramic honeycomb is hard and brittle, as shown in Fig. 4, so that chipping 4a easily occurs in the outermost cell walls 4 constituting the grooves 14, and part of the cell walls 4 are easily cracked (see page 4, lines 6-19 and Fig. 4).

Applicants wish to emphasize that (as shown in Example 32 in Table 7), the honeycomb structure formed by removing a peripheral wall and nearby cell walls after firing is poor in Isostatic Strength (page 46, line 8 to page 47, line 3 (Example 32) and Example 32 in Table 7 at page 49 of the specification).

In contrast to the invention of claim 43, Horikawa discloses a process for producing a ceramic honeycomb structural body includes the steps of:

producing a ceramic honeycomb fired body by shaping a ceramic material by extrusion,

drying and firing the shaped body; removing a peripheral portion of the ceramic honeycomb **fired body** by working; and

forming an outer wall portion around an outer peripheral surface of the worked ceramic honeycomb fired body (see Abstract of Horikawa).

Accordingly, the technical feature of claim 43 directed to a ceramic honeycomb body obtained by removing a peripheral wall and before firing is essential, and both Kotani and Horikawa are silent on this aspect of the present invention.

Accordingly, Applicants submit that one of ordinary skill in the art referring to Kotani and Horikawa would not find obvious the subject matter of claim 43 and, accordingly, claim 43 is allowable over Kotani even if combined with Horikawa.

With respect to claim 47 (old claim 17), the subject matter of this claim is directed to

> "The ceramic honeycomb structure according to claim 1, wherein said peripheral wall layer is formed before or after firing said ceramic honeycomb body."

Claim 47 thus defines that the peripheral wall layer is formed before or after firing the ceramic honeycomb body in the ceramic honeycomb structure of amended claim 1.

Applicants wish to emphasize that Horikawa does not teach or suggest any ceramic honeycomb structure having stress release portions provided between the peripheral wall layer and the grooves as claimed in claim 1.

The Examiner states in Paragraph 24 of the Office Action that:

> "In regard to claim 19, Kotani et al. does not disclose the addition of a pore forming agent to the honeycomb slurry, or quantitative values for porosity and pore size."

The Examiner states also in Paragraph 25 of the Office Action that:

> "Horikawa et al. disclose a pore forming agent to the slurry, or example graphite, starch powder and sawdust (Column 3, Lines 13-16)."

The Examiner states further in Paragraph 26 of the Office Action that:

> "At the time the invention was made it would have been obvious to add a pore forming agent to make a porous ceramic honeycomb structure, as it was common in the art at the time the invention was made, as evidenced by Horikawa et al. The porosity and average pore size of the honeycomb structure is dependent upon the type and amount of pore forming agent used, and is therefore a result effective variable that can be determined experimentally."

Claim 51 (old claim 19 amended) calls for:

> "The ceramic honeycomb structure according to any one of claims 1 to 28-30, 33-35, 38-41, 43-45 or 47-53, wherein said cell walls have a porosity of 50 to 80% and an average pore size of 10 to 50 μm."

In the ceramic honeycomb structures of the present invention as claimed in multiply dependent claim 51, the cell walls 4 have a porosity of 50-80%.

When the cell walls 4 have a porosity of 50% or more, coating materials for forming the peripheral wall layer 12 easily penetrate into the pores of the cell walls 4, resulting in a large "anchoring effect". Because the peripheral wall layer 12 and the grooves 14 are integrally bonded by the anchoring effect, the honeycomb structure 1 has high mechanical strength. However, when the porosity exceeds 80%, the strength of the cell walls 4, and thus mechanical strengths such as isostatic strength, etc., of the honeycomb structure 1, are too low. As the mechanical strengths such as isostatic strength, etc., decrease, the honeycomb structure 1 becomes easily broken by any mechanical stress such as engine vibration, road surface vibration, etc., in the case where it is used as a catalyst carrier or a particulate-capturing filter.

The cell walls 4 also preferably have an average pore size of 10 to 50 μm. When the average pore size is 10 μm or more, the coating materials for forming the peripheral wall layer 12 easily penetrate into the pores of the cell walls 4, resulting in a large "anchoring effect." However, when the average pore size exceeds 50 μm, the strength of the cell walls 4 undesirably decreases (see page 23, lines 6-23; and Fig. 1 of the specification).

Based on the distinguishing features of the ceramic honeycomb structures of the present discussed above, the specification of the present application describes at page 8 that: "In the preferred embodiment of the present invention, the ceramic honeycomb structure has an isostatic strength of 1.5 MPa or more. The cell walls of the ceramic honeycomb structure have a porosity of 50 to 80% and an average pore size of 10 to 50 μm (see page 8, lines 11-14 in view of page 25, lines 7-12 of the specification)." Both Kotani and Horikawa are silent on such aspects of the present invention.

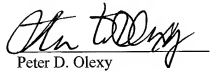
Therefore, those skilled in the art referring to Kotani and Horikawa would not be able to achieve the distinguished feature of claim 51, and, accordingly, claim 51 is not obvious over Kotani even though combined with Horikawa.

Withdrawal of all rejections and allowance is requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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